File NR G2-28918
WR Doc ID 2222112

State of Washington

DRAFT

REPORT OF EXAMINATION FOR WATER RIGHT APPLICATION

PRIORITY DATE	WATER RIGHT NUMBER
9/21/1993	G2-28918

MAILING ADDRESS	SITE ADDRESS (IF DIFFERENT)
CAPE GEORGE COLONY CLUB INC 61 CAPE GEORGE DR PORT TOWNSEND WA 98368	11 JOHNSON AVENUE LOT 7 PORT TOWNSEND WA

Quantity Authorized for Withdrawal or Diversion

WITHDRAWAL OR DIVERSION RATE	UNITS	ANNUAL QUANTITY (AF/YR)
386	GPM	192

Withdrawals under all existing water rights must not exceed the quantities specified above.

Purpose

PURPOSE	WITHDRAWAL OR DIVERSION RATE			ANNUAL QUANTITY (AF/YR)		PERIOD OF USE (mm/dd)
	ADDITIVE	NON-ADDITIVE	UNITS	ADDITIVE	NON-ADDITIVE	
Municipal Supply	0	386	GPM	32	160	01/01 - 12/31

IRRIGATED ACRES		PUBLIC WATER SYSTEM INFORMATION	
ADDITIVE	NON-ADDITIVE	WATER SYSTEM ID	CONNECTIONS
0	0	11050	

Source Location

COUNTY	WATERBODY	WATERSHED PLANNING SUB-BASIN	WATER RESOURCE INVENTORY AREA
JEFFERSON	GROUNDWATER	QUIMPER PENINSULA	17-QUILCENE-SNOW

SOURCE FACILITY/DEVICE	PARCEL	WELL TAG	TWP	RNG	SEC	QQ Q	LATITUDE	LONGITUDE
Well 4	941500007	ACQ519	30N	01W	18	NWSW	48.0908	-122.8611
Well 5	941500007	BHF217	30N	01W	18	NWSW	48.0911	-122.8609
Well 6	941500007	AEA524	30N	01W	18	NWSW	48.0911	-122.8609
Well 8	941500007	BHF223	30N	01W	18	NWSW	48.0911	-122.8609

Datum: NAD83/WGS84

Place of Use (See Attached Map)

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE

The place of use (POU) of this water right is the service area described in the most recent Water System Plan/Small Water System Management Program approved by the Washington State Department of Health, so long as the water system is and remains in compliance with the criteria in RCW 90.03.386(2). RCW 90.03.386 may have the effect of revising the place of use of this water right.

Proposed Works

Well 4 (ACQ519): 8" x 300'
Well 5 (BHF217): 8" x 300'
Well 6 (AEA524): 8" x 294'
Well 8 (BHF223): 8" x 294'
A municipal water supply system consisting of 12-, 8-, 6- and 4-inch distribution lines and four above-ground storage reservoirs.

Development Schedule

BEGIN PROJECT	COMPLETE PROJECT	PUT WATER TO FULL USE
Started	Completed	March 1, 2031 **Progress reports due:** 03-01-2021 and 03-01-2026

Measurement of Water Use

How often must water use be measured?	Weekly
How often must water use data be reported to Ecology?	Annually (by January 31)
What volume should be reported?	Total Monthly and Annual Volumes
What rate should be reported?	Annual Peak Rate of Withdrawal (gpm)

Provisions

Combined withdrawals from all sources under all existing water rights must not exceed 386 gallons per minute or 192 acre-feet per year.

Wells, Well Logs and Well Construction Standards
All wells constructed in the state shall meet the construction requirements of WAC 173-160 titled "Minimum Standards for the Construction and Maintenance of Wells" and RCW 18.104 titled "Water Well Construction". Any well which is unusable, abandoned, or whose use has been permanently discontinued, or which is in such disrepair that its continued use is impractical or is an environmental, safety or public health hazard shall be decommissioned.

All wells shall be tagged with a Department of Ecology unique well identification number. If you have an existing well and it does not have a tag, please contact the well-drilling coordinator at the regional Department of Ecology office issuing this decision. This tag shall remain attached to the well. If you are required to submit water measuring reports, reference this tag number.

Installation and maintenance of an access port as described in WAC 173-160- 291(3) is required.

Measurements, Monitoring, Metering and Reporting
An approved measuring device shall be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", WAC 173-173.

Recorded water use data shall be submitted via the Internet. To set up an Internet reporting account, contact the Southwest Regional Office.

WAC 173-173 describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition the Department of Ecology for modifications to some of the requirements.

Department of Health Requirements
Prior to any new construction or alterations of a public water supply system, the State Board of Health rules require public water supply owners to obtain written approval from the Office of Drinking Water of the Washington State Department of Health. Please contact the Office of Drinking Water at Southwest Drinking Water Operations, 243 Israel Road S.E., PO Box 47823, Tumwater, WA 98504-7823, (360) 236-3030.

Water Use Efficiency
The water right holder is required to maintain efficient water delivery systems and use of up-to-date water conservation practices consistent with RCW 90.03.005.

Progress Report
A Progress Report must be submitted to the Department of Ecology as noted in the development schedule. The report must include the status of build-out including the number of active services, water system planning updates, and a demonstration of compliance with all permit provisions.

Proof of Appropriation
The water right holder shall file the notice of Proof of Appropriation of water (under which the certificate of water right is issued) when the permanent distribution system has been constructed and the quantity of water required by the project has been put to full beneficial use. The certificate will reflect the extent of the project perfected within the limitations of the permit. Elements of a proof inspection may include, as appropriate, the source(s), system instantaneous capacity, beneficial use(s), annual quantity, place of use, and satisfaction of provisions.

Schedule and Inspections
Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the project location, and to inspect at reasonable times, records of water use, wells, diversions, measuring devices and associated distribution systems for compliance with water law.

Findings of Facts
Upon reviewing the investigator’s report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I concur with the investigator that water is available

from the source in question; that there will be no impairment of existing rights; that the purpose of use is beneficial; and that there will be no detriment to the public interest.

Therefore, I ORDER approval of Application No. G2-28918, subject to existing rights and the provisions specified above.

Your Right To Appeal

You have a right to appeal this Order to the Pollution Control Hearings Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do the following within 30 days of the date of receipt of the Order.

File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.

- Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

- You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608
Pollution Control Hearings Board 1111 Israel RD SW Ste 301 Tumwater, WA 98501	**Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

Signed at Olympia, Washington, this _____ day of _____ 2016.

_____

Michael J. Gallagher, Section Manager
Water Resources

For additional information visit the Environmental Hearings Office Website: http://www.eho.wa.gov. To find laws and agency rules visit the Washington State Legislature Website: http://www1.leg.wa.gov/CodeReviser.

INVESTIGATOR'S REPORT
Application for Water Right -- Cape George Colony Club Inc
Water Right Control Number G2-28918
Marie Peter, Department of Ecology

BACKGROUND

This report serves as the written findings of fact concerning Water Right Application Number G2-28918.

On September 2, 1993, Cape George Colony Club Inc (Cape George) applied for a permit to appropriate groundwater for multiple domestic/municipal supply. Under this application, Cape George requests an "umbrella water right" covering all primary production and standby/emergency wells and authorizing total withdrawals of 386 gallons per minute (gpm) and 192 acre-feet per year.

Table 1 Summary of Requested Water Right

Applicant Name:	Cape George Colony Club Inc
Date of Application:	9/21/1993
Place of Use	The place of use (POU) of this water right is the service area described in the most recent Water System Plan/Small Water System Management Program approved by the Washington State Department of Health, so long as the water system is and remains in compliance with the criteria in RCW 90.03.386(2). RCW 90.03.386 may have the effect of revising the place of use of this water right.

County	Waterbody	Watershed Planning Sub-basin	WRIA
Jefferson	Groundwater	Quimper Peninsula	17-Quilcene-Snow

Purpose	Rate	Unit	Ac-ft/yr	Begin Season	End Season
Municipal Supply	386	GPM	192	01/01	12/31

Source Name	Parcel	Well Tag	Twp	Rng	Sec	QQ Q	Latitude	Longitude
Well 4	941500007	ACQ519	30N	01W	18	NWSW	48.0908	-122.8611
Well 5	941500007	BHF217	30N	01W	18	NWSW	48.0911	-122.8609
Well 6	941500007	AEA524	30N	01W	18	NWSW	48.0910	-122.8609
Well 8	941500007	BHF223	30N	01W	18	NWSW	48.0910	-122.8609

GPM= Gallons per Minute; Ac-ft/yr = Acre-feet per year; Sec. = Section; QQ Q = Quarter-quarter of a section; WRIA = Water Resource Inventory Area; W.W.M. = West of the Willamette Meridian; Datum: NAD83/WGS84.

Legal Requirements for Approval of Appropriation of Water

Public Notice
RCW 90.03.280 requires that notice of a water right application be published once a week, for two consecutive weeks, in a newspaper of general circulation in the county or counties where the water is to be stored, diverted and used. Notice of this application was published in the *Port Townsend-Jefferson*

County Leader on November 3, 1993 and November 10, 1993. No protests or letters of concern were received as a result of this notice.

Consultation with the Department of Fish and Wildlife
The Department of Ecology (Ecology) must give notice to the Washington Department of Fish and Wildlife (WDFW) of applications to divert, withdraw or store water. WDFW was not specifically consulted for this application because it was determined that the proposed withdrawals will not adversely affect surface water flows.

State Environmental Policy Act (SEPA)
A water right application is subject to a SEPA threshold determination (i.e., an evaluation whether there are likely to be significant adverse environmental impacts) if any one of the following conditions are met.

(a) It is a surface water right application for more than 1 cubic foot per second, unless that project is for agricultural irrigation, in which case the threshold is increased to 50 cubic feet per second, so long as that irrigation project will not receive public subsidies;
(b) It is a groundwater right application for more than 2,250 gallons per minute;
(c) It is an application that, in combination with other water right applications for the same project, collectively exceed the amounts above;
(d) It is a part of a larger proposal that is subject to SEPA for other reasons (e.g., the need to obtain other permits that are not exempt from SEPA);
(e) It is part of a series of exempt actions that, together, trigger the need to do a threshold determination, as defined under WAC 197-11-305.

Because this application does not meet any of these conditions, it is categorically exempt from SEPA and a threshold determination is not required.

INVESTIGATIONS

My evaluation of this application included research and review of the following:

- Department of Ecology's Water Rights Tracking System database and Well Log Image System.
- The December, 2012, Cape George Colony Club Water System Plan prepared by Northwestern Territories, Inc., and the December, 2013, update of demand forecast and water use efficiency information.
- Field notes and observations from a site visit by Matt Rakow and Marie Peter on March 20, 2015.
- On-site and telephone communications with Arthur Burke, Manager of Cape George Colony Club.
- Chapter 173-517 Washington Administrative Code (WAC) – *Water Resources Management Program for the Quilcene-Snow Water Resources Inventory Area (WRIA 17)*
- Memorandum by Ecology staff hydrogeologist, Matt Rakow, dated October 7, 2015.

Location

The Cape George Colony Club water system service area is located on Discovery Bay, on the west side of the Quimper Peninsula in Jefferson County. The community is situated approximately five miles west of the City of Port Townsend in the Quilcene-Snow Water Resource Inventory Area (WRIA 17).

Residential and resort development is concentrated along the shores of Discovery Bay on the west side of the service area. Larger lots and wooded areas occupy the upland areas to the east. Public Utility District No. 1 of Jefferson County's South Hastings Loop/Local Utility District No. 3 Water System serves areas south of the Cape George community.

Cape George Water System's active wells, Wells 4, 5, 6 and 8, are located in a fenced enclosure on a gently graded hilltop near the intersection of Johnson Avenue and Saddle Drive, approximately one mile east of Discovery Bay. Although no surface water bodies are present at the well site, the hilltop slopes steeply to the east and more gently to the west, draining to two small intermittent streams that eventually discharge in a common northwesterly direction to Discovery Bay.

Description and History of Water System

Wells 4, 5, 6 and 8 are similar in depth and located in very close proximity, functioning as a well field. The wells pump directly to an iron and manganese treatment facility prior to entering four above-ground storage reservoirs. The distribution system consists of 12-inch mains and 4-, 6- and 8-inch diameter lines. Although most of the service area is gravity-fed, a booster system is used to serve higher elevations.

The Cape George water system was established in the early 1960's to serve the plat of Cape George Colony. The service area later expanded to include the plat of Cape George Village and The Highlands.

Parcel sizes in the community vary considerably, ranging from about 1/3 of an acre to more than five acres. The marina area is more densely developed with smaller homes and vacation cabins while the larger upland parcels are developed with larger single-family residences.

Cape George Water System currently serves approximately 525 connections. At full build-out, the system expects to serve 665 connections, consisting of:

- 364 connections in Cape George Colony, including Tracts A and B
- 285 connections in Cape George Village/Highlands, Ingersoll's Addition and a private residence.
- 12 connections in the Crest Haven subdivision.
- Four additional services, including the community clubhouse, office and fire hall.

Water Rights Summary

The primary water rights for the Cape George Colony Club (Cape George) community, Water Rights 5576-A and 5577-A, were issued in 1965 to cover withdrawals from Wells 1 and 2. A third non-additive water right was issued for Well 3 in 1969. These three wells were located in the southeast quarter of Section 13, T. 30 N. R. 2 W.W.M., seaward of the current well field. All of these wells have been decommissioned.

Subsequent non-additive water rights were issued for Well 4 in 1969 and 1975, and Well 5 in 1975, as the wells were brought on-line. Well 6 was added to the water right covering Well 5 under a change application approved on September 21, 2000. The newest source, Well 8, was added to the Well 5 water right through a *Showing of Compliance* affidavit filed on July 27, 2012. These four sources make up the current well field.

Table 2: Existing Water Rights for Cape George Colony Club

Water Right Number	*Source*	*Priority Date*	*Instantaneous Quantity*	*Annual Quantity (in ac-ft/yr)*
Certificate 5576-A/Certificate of Change CV1-2P122	Well 1	03-17-1965	60 gpm	96 primary/additive
Certificate 5577-A/Certificate of Change CV1-2P57	Well 2	03-17-1965	60 gpm	96 primary/additive
Certificate G2-00947	Well 3	09-22-1969	30 gpm	48 non-additive
Certificate G2-00945	Well 4	09-22-1969	61 gpm	98.2 non-additive
Certificate G2-23759	Well 4	03-19-1975	140 gpm	160 non-additive
Permit G2-23774	Wells 5, 6, 8	04-02-1975	185 gpm	160 non-additive[1]

Cape George Water System has six existing water rights, authorizing a combined maximum withdrawal rate of 386 gpm. Although a total annual authorization of 192 ac-ft/yr was authorized under the system's primary rights, a provision limiting total system withdrawals to 160 ac-ft/yr was subsequently placed on Permits G2-23759 and G2-23774 in 1975, based on source meter data indicating a lower per-connection demand than had originally been anticipated.

It had been Ecology's practice to issue final water right certificates for public water systems, prior to full build-out, based solely on the completion of a distribution system capable of delivering the authorized quantities of water. Consequently, all of Cape George's existing water rights, including Water Right G2-23774, were certificated well before full use of the allocated quantities. However, Water Right G2-23774 was rescinded in 2000 and returned to permit status when a change was approved to add Well 6.

Under an existing settlement agreement (PCHB Order No. 11-041), Ecology and Cape George Colony Club are directed to work cooperatively to resolve the uncertainty surrounding the system's annual quantity limit. The formal issuance of additive annual quantity under Application G2-28918 was identified as a possible means to resolve this uncertainty.

The actual extent and validity of existing water rights can only be determined by a Superior Court. In order to issue a decision on this application, Ecology must tentatively determine the existing total annual quantity available and determine if this "umbrella" right covering all sources should be issued completely non-additive to existing rights or partially non-additive, with 32 acre-feet additive. In the absence of a Superior Court determination, we recommend that this permit be issued for an additive quantity of 32 acre-feet per year with the condition that withdrawals under all existing rights combined, not exceed 192 ac-ft/yr.

Water Use and Demand Projections

Due to the magnitude of this project, the Cape George community continues to grow into each of its existing water rights. The community's 2014 use of 23,631,379 gallons, or 72.5 ac-ft/yr, is low in part due to the current high percentage of seasonal users and unoccupied homes. The most recent water

[1] The annual quantity specified on Amended Superseding Permit G2-23774 was contested and appealed by Cape George Colony Club resulting in a settlement agreement between Cape George Colony Club and the Department of Ecology under PCHB No. 11-041. Upon approval of this application for 192 ac-ft/yr per year, the annual quantity on Permit G2-23774 will be superseded and restored to reflect the originally authorized quantity of 160 ac-ft/yr.

system planning update forecasts a requirement of 192 acre-feet per year for the projected build-out of 665 services. This amounts to an average use of 258 gallons per day per service.

The Cape George system has been fully metered for decades. Source meters are installed on each well and withdrawals are recorded daily. Remote reading meters are also installed at each service connection and an inverted rate structure and conservation pricing are in place to promote efficient water use. The water system plan indicates that distribution system leakage is currently under 5% and that filter backwash water will be maintained at 5% or less of total system use.

Under RCW 90.03.386(3), a municipal water supplier must implement cost-effective water conservation, in accordance with the requirements of RCW 70.119A.180, as part of its approved water system plan or small water system management program. The Cape George system appears to have achieved a reasonably high level of water use efficiency and the system has received Department of Health approval for full build-out of 665 services.

Although the Cape George community's current per-connection rate of use is considerably less than the projected rate of use, the most recent demand forecast for the system indicates that an additional allocation of 32 ac-ft/yr is needed for build-out because:

- The community is still experiencing the lingering effects of the most recent economic downturn but expects new development and occupancy of existing homes to rebound over the next few decades. Use of water for recreational purposes is also expected to increase as the economy improves.
- There is an overall trend of properties changing from seasonal use to full-time occupancy in this community.
- Many of the remaining undeveloped lots are larger upland parcels that will likely require more water for irrigation of lawns and gardens.

Hydrologic/Hydrogeologic Evaluation

The main aquifer unit in this area is the advance outwash unit of the Vashon Stade glaciation. The advance outwash at the project site is bounded above by lodgment till and below by Olympia age non-glacial deposits.

Well logs for Cape George Wells 4, 5, 6, and 8 show that the aquifer at this location is under weakly confined conditions with a potentiometric head ranging from five to 12 feet. A 24-hour pump test was performed on Well 6 in 1998 and Well 4 was used as an observation well. However, the pumping rate was increased at least three separate times during the first 40 minutes of the pump test and data for the first 18 minutes is not present in the notes. Pumping at 205 gpm resulted in a maximum drawdown of 4.92 feet in Well 6. Full recovery of water levels occurred in two minutes. Well 4 experienced a maximum drawdown of two inches at a distance of 200 feet from Well 6.

A constant-rate pump test was run on Well 8 in 2012 without an observation well. The well was pumped at a rate of 148 gpm for 24 hours. Approximately 3.0 feet of drawdown was observed in this well during the test. Full recovery was achieved within eight minutes.

The results of these pump tests suggest that the aquifer was not stressed enough to induce drawdown of water levels in the wells with enough magnitude to apply standard aquifer characterization

equations. Regardless, the minimal water level drawdown and recovery times observed during each pump test indicate water is available in the quantity requested.

Source Wells

Well 6 and 8, the primary production wells for the Cape George system, are pumped alternately on a monthly basis. Well 4 is only used for system flushing and Well 5 is being maintained as an emergency back-up source. According to Art Burke, manager of the water system, the pumps for each well are set to pump 184 gpm.

Table 3: Well Attributes

	Well #6 (AEA524) ***Primary Production***	***Well #8 (BHF223)*** ***Primary Production***
Date completed	06-30-1998	11-30-2011
Approximate wellhead elevation	400 feet above mean sea level (msl)	400 feet msl
Completion depth	300 feet below ground surface (bgs)	294 feet bgs
Approximate Completion elevation	+100 feet msl	+106 feet msl
Well casing diameter	8 inches	8 inches
Screen/perforation depth	Screened 273-294 feet	Screened 274-294 feet
Static water level (btoc); date	262’ 10” (08-19-1998)	260.4 feet (11-30-2011)
Production capacity	170 gpm	225 gpm

	Well #4 (ACQ519) ***Filter Backwash***	***Well #5 (BHF217)*** ***(ex- ABR385)*** ***Emergency/Back-up***
Date completed	02-11-1969	05-17-1978
Approximate wellhead elevation	400 feet above msl	400 feet msl
Completion depth	300 feet bgs	300 feet bgs
Approximate Completion elevation	+100 feet msl	+100 feet msl
Well casing diameter	8 inches	8 inches
Screen/perforation depth	Screened 295–300 feet	Screened 273-293 feet
Static water level (btoc); (date)	259 feet; (02-11-1969)	258 feet (05-17-1978)
Production capacity	175 gpm	50 gpm

All four wells are completed in the advanced outwash aquifer. However, none of the wells fully penetrates the aquifer. Based on cross-sections from Grimstand and Carson (1981), all four wells penetrate only the top two-thirds of the aquifer. They have similar patterns in the lithology reported on the well logs. Each log lists a layer of hardpan in the upper 100 feet that is at least 20 feet thick and a clay layer that is 90 to 100 feet thick starting between 132 to 140 feet below ground level. Water levels measured at the time of construction for all four wells were between 258 to 262 feet below the top of the well (Washington State Department of Ecology, 2015a).

Cape George drilled Well 7 in 2011 to provide more flexibility for the water system. The well was located just outside the fenced perimeter and drilled to a final depth of 320 feet below ground surface. This well ended up being a dry hole. The geologic materials observed during drilling matched those of the Wells 4, 5, and 6 almost exactly. The most important exception is that from 264 to 297 feet below ground surface, water-bearing sand did not exist as it did in the other wells. Instead, there is a 33 foot thick section of hardpan, otherwise known as glacial till. Glacial till is considered an aquitard because it has such a low permeability. The driller broke out of the hardpan and drilled another 23 feet but only found clay. One hypothesis on the absence of the water-bearing sand in Well 7 is the presence of a

subglacial or fluvioglacial landform. The fact remains that Wells 4 and 5 do not have hardpan listed at this depth range on the driller logs and Wells 6 and 8 encountered only 7 and 8 feet of hardpan respectively. Given the proximity to the other wells, it is a sharp contrast to go from what was observed during drilling Wells 4, 5, 6, and 8 versus having 33 feet of hardpan in Well 7 (Washington State Department of Ecology, 2015a).

Vicinity Well Logs

Four permit exempt water wells located within one half mile of the Cape George source wells have driller's logs in Ecology's well log database (Table 4). Satellite imagery of the surrounding area suggests the possible existence of additional permit-exempt wells within one half mile of the Cape George source wells that are not registered with Ecology. Approximately half of the area within that half mile radius lies within the Cape George water system service area. A little less than a quarter of the remaining areas consists of undeveloped lots, and the remaining parcels are most likely served by existing permit-exempt wells (Washington State Department of Ecology, 2015a).

Table 4: Neighboring Well Information

Well Owner	A. Woodbury	J. Welch	J. Kelly	T. Nowell
Water Right #	Exempt	Exempt	Exempt	Exempt
Well Tag I.D.	ACP335	n/a	AKS821	AFG815
QQ Q	SE NE	SE NE	SW NW	NW
Completion Date	9/24/99	5/1/90	10/13/05	10/13/00
Land Surface Elevation (ft amsl)	290	330	400	400
Drilled Depth (ft)	186	300	440	306
Well Depth (ft)	186	277	158	306
Diameter (in)	6	6	6	6
SWL (ft btoc)	156	227	130	279
Screened Interval (ft bgs)	181-186	272-277	141-151	301-306
Screened Interval Elevation (ft amsl)	104-109	53-58	249-259	94-99
Bailer Test (gpm)	10	7	3.5	15 (Air test)
Drawdown (ft)	8	n/a	17	Stem @ 300
Test Duration (hrs)	2	1	1	2

The following conclusions are based on analysis of available data for the above wells and the Cape George source wells:

- The Cape George wells and the Nowell well are completed in the same water-bearing sand layer.
- The Kelly, Welch, and Woodbury wells are completed in small sand seams in otherwise thick sequences of clay that are isolated from the Cape George wells and Nowell well.
- It is unclear if the Nowell well fully penetrates the aquifer. Based on the depth and locations of a lower clay unit observed in the Kelly well, the Nowell well most likely would have encountered the same clay unit within an additional 20 feet of drilling.
- The well log for Cape George Well 5 states that four feet of clay was encountered 296 feet below ground surface. This shows that the Cape George wells completely penetrate the aquifer.

- The geologic materials reported on the Nowell well log do not correlate completely with the well logs from the Cape George wells and the Kelly well. The Cape George wells and the Kelly well have substantial sand layer in the upper half of the wells that isn't reported on the Nowell well log. Projecting this layer onto the Nowell well would place the sand layer from around 65 to 130 feet below ground.
- The water-bearing unit that the Cape George wells are completed in appears to pinch out and disappear to the northwest. The Cape George wells are screened in a layer of sand that lies beneath a layer of glacial till, creating confined conditions in that part of the aquifer. Moving northwest to the Nowell well, there is no confining layer above the water-bearing sand and unconfined conditions are present in the water-bearing sand. Moving to the Kelly well there is no water-bearing portion within the sand even though it is the same sand unit that was encountered in the Cape George and Nowell wells.
- The variability in the observed geology between all of the wells is not surprising since Cape George's Well 7 was a dry hole and was less than 50 feet from Wells 6 and 8. The Well 7 driller log reports only hardpan (otherwise known as glacial till) where water-bearing sand is reported on the driller's well logs for the Cape George wells. This sharp contrast in geologic material and absence of an aquifer is possibly due to the presence of a subglacial or fluvioglacial depositional land form.
- The direction of water movement is presumed to be to the west toward Discovery Bay. However, this cannot be confirmed given the lack of data to establish a potentiometric head gradient within the target aquifer and the complex geology surrounding the aquifer.

Water Availability

For water to be available for appropriation, it must be both physically and legally available.

Physical availability

For water to be physically available for appropriation, groundwater must be present in sufficient quantity and quality to provide a reasonably reliable source for the requested beneficial use.

Well 5 has suffered from a decline in production. Although it was reconditioned, the decline has persisted and the well is now maintained for emergency use only. However, this problem only affects Well 5 and is not indicative of a problem with the physical availability of water from the aquifer. The likely cause is the well screen's inability to continue transmitting water. This is generally caused by fine material build-up in the geologic formation near the screen, sand bridging in the well screen, or encrustation on the well screen.

For over three decades, high quality drinking water has continuously been available from the Cape George source wells in the quantities authorized with no reports of well declines in neighboring wells. Water should continue to be physically available from the well field at the rate and quantity requested.

Legal availability

To determine if water is legally available for appropriation, the following factors are considered:

- Regional water management plans which may specifically close certain water bodies to further appropriation.

- Existing rights which may already appropriate physically available water.
- Fisheries and other in-stream uses (e.g., recreation and navigation). In-stream needs, including in-stream and base flows set by regulation. Water is not available for out of stream uses where further reducing the flow level of surface water would be detrimental to existing fishery resources.
- The Department may deny an application for a new appropriation in a drainage where adjudicated rights exceed the average low flow supply, even if the prior rights are not presently being exercised. Water would not become available for appropriation until existing rights are relinquished for non-use by state proceedings.

In-stream Flow Considerations
On December 31, 2009, an in-stream flow rule became effective for WRIA 17 under Chapter 173-517 Washington Administrative Code (WAC). The rule established minimum stream flows and closures for WRIA 17 streams and classified WRIA 17 sub-basins as Reserve or Coastal Management Areas for the purpose of administering future water appropriations and use. The Cape George water system service area is located within the Quimper Peninsula Coastal Management Area.

WAC 173-517-110 states that a new surface or groundwater appropriation may occur only if it is consistent with the surface and groundwater statutes and applicable requirements of law and if one of seven specified conditions applies. Under WAC 173-517-110(3), new appropriations are allowed if the proposed groundwater withdrawal is located where it would not adversely affect any surface waters closed under WAC 173-517-100(1), by meeting either of two specified conditions, (a) or (b), of this subsection. The rule does not close or set minimum in-stream flows for the two unnamed streams that the Cape George well site drains to and the proposed appropriation meets condition (b) which allows new appropriations from sources located in a designated Coastal Management Area.

Impairment Considerations

Impairment is an adverse impact on the physical availability of water for a beneficial use that is entitled to protection. A water right application may not be approved if it would:

- Interrupt or interfere with the availability of water to an adequately constructed groundwater withdrawal facility of an existing right. An adequately constructed groundwater withdrawal facility is one that (a) is constructed in compliance with well construction requirements and (b) fully penetrates the saturated zone of an aquifer or withdraws water from a reasonable and feasible pumping lift.
- Interrupt or interfere with the availability of water at the authorized point of diversion of a surface water right. A surface water right conditioned with in-stream flows may be impaired if a proposed use or change would cause the flow of the stream to fall to or below the in-stream flow more frequently or for a longer duration than was previously the case.
- Interrupt or interfere with the flow of water allocated by rule, water rights, or court decree to in-stream flows.
- Degrade the water quality of the source to the point that the water is unsuitable for beneficial use by existing users (e.g., via sea water intrusion).

The Department of Ecology's Water Right Tracking System (WRTS) database indicates that except for existing rights held by Cape George Colony, no other water right permits or certificates have been issued authorizing groundwater withdrawals from sources located within a half-mile radius of the Cape George well field. There are also no water right claims recorded within a half mile.

Water Right Certificate G2-24396 for William Ward and Benny Short was issued for 25 gpm for domestic supply of two homes from an 85-foot deep well located just over ½ mile northeast of the Cape George well site. There are also seven groundwater right claims recorded within an approximate one-mile radius of the wells. Although Ecology's Well Log database indicates that a number of wells are recorded within Section 18, T. 30 N. R. 1 W.W.M., no other wells are located within the same quarter section as the Cape George sources. Also, most existing wells between the Cape George well site and the Discovery Bay shoreline appear to be situated within Cape George's own water service area (Washington State Department of Ecology, 2015b).

The permit-exempt Nowell well, located approximately 800 feet northwest, is the only nearby well on record completed in the same water-bearing unit as the Cape George wells and appears to fully penetrate the aquifer. Although domestic use of water from this well is junior to that of Cape George's existing water rights, it must be protected from impairment that could result from changes or increases in withdrawals from the Cape George well field. However, impairment at that distance from the well field is very unlikely because pump test results from the Cape George wells indicate a highly productive aquifer with minimal drawdown and quick recovery in the pumped wells.

Pumping the Cape George well field will not result in saltwater intrusion because the wells are completed approximately 100 feet above mean sea level and are situated almost one mile inland from Discovery Bay. Thus, approval of this right will not degrade water quality in the aquifer.

Although the priority date of this application is earlier than the effective date of the WRIA 17 in-stream flow rule, this decision is junior and subject to the requirements of Chapter 173-517 WAC. The proposed appropriation is located in a coastal management area and will not affect surface flows in any streams regulated under the WRIA 17 rule.

Beneficial Use

Use of water for municipal supply purposes is a beneficial use under RCW 90.54.020(1).

Public Interest Considerations

The 1997 update of the Eastern Jefferson County Coordinated Water System Plan identifies Cape George Colony Water System as the designated public water provider for the service area identified in its most recent water system plan update. RCW 90.54.020(8) promotes the development of water supply systems which provide water to the public generally in regional areas within the state. The proposed appropriation will allow Cape George to continue serving public water to area residents, thereby discouraging the proliferation of wells and small water systems. Municipal water systems also have the resources to promote more efficient use of limited water supplies.

The proposed appropriation will not reduce base flows necessary for the preservation of wildlife, fish, scenic, aesthetic or other environmental values and will not degrade the quality of the natural environment. Approval of this request is consistent with the goals of the WRIA 17 watershed plan and other local plans.

Consideration of Protests and Comments
No protests were filed against this application.

CONCLUSIONS

In accordance with RCW 90.03 and 90.44, I find that:

- Water is physically and legally available for appropriation as requested.
- The proposed use of water for municipal supply purposes is beneficial.
- The proposed withdrawals will not impair existing rights.
- The proposed appropriation of water, as recommended, will not be detrimental to the public interest.

RECOMMENDATIONS

Based on the above investigation and conclusions, I recommend that this request for a water right be approved in the amounts and within the limitations listed below and subject to the provisions listed above

Purpose of Use and Authorized Quantities

The amount of water recommended is a maximum limit and the water user may only use that amount of water within the specified limit that is reasonable and beneficial:

- 386 gallons per minute
- 192 ac-ft/yr (32 ac-ft/yr additive and 160 ac-ft/yr non-additive to existing rights)
- Municipal supply
- Points of withdrawal within NW¼ SW¼ Section 18, T. 30 N., R. 1 W.W.M.
- Place of Use: As described on Page 1 of this Report of Examination.

Cape George Colony Club is advised that if wells under this water right are replaced or additional wells are drilled within the quarter quarter-section specified on this right, a *Showing of Compliance* affidavit must be filed to authorize withdrawals from the new wells.

Report Writer *Date*

If you need this publication in an alternate format, please call Water Resources Program at (360) 407-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

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Attachment 1: Vicinity Map